General

Guideline Title

ACR Appropriateness Criteria® penetrating neck injury.

Bibliographic Source(s)

Schroeder JW, Ptak T, Corey AS, Ahmed O, Biffl WL, Brennan JA, Chandra A, Ginsburg M, Hanley M, Hunt CH, Johnson MM, Kennedy TA, Patel ND, Policeni B, Reitman C, Steigner ML, Stiver SI, Strax R, Whitehead MT, Dill KE, Expert Panels on Neurologic and Vascular Imaging. ACR Appropriateness CriteriaÂ® penetrating neck injury. Reston (VA): American College of Radiology (ACR); 2017. 7 p. [33 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

ACR Appropriateness Criteria®

Clinical Condition: Penetrating Neck Injury

Variant 1: Penetrating neck injury. Clinical soft injury signs.

Radiologic Procedure	Rating	Comments	RRL*
CTA neck with IV contrast	9	This procedure is the imaging study of choice. See references 2,5,6,8,11-17 in the original guideline document.	☢☢☢
X-ray neck	7	Use this procedure to screen and prior to MRI/MRA in gunshot wounds and in some stab wounds if there is any question as to the integrity of the weapon.	☢☢
US neck	5	See references 4,13-15,22,23 in the original guideline document.	O
MRA neck without and with IV contrast	5	See references 4,10,13,15,21,26 in the original guideline document.	O
Arteriography neck	5	See references 4,10,13,15,21,26 in the original guideline document.	☢☢☢

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative

Radiologic Procedure	Rating	Comments	RRL*
		test/treatment to a CTA or MRA. See references 2,6,11,20,21 in the original guideline document.	
X-ray biphasic esophagram	5	See references 2,6,8,11,27 in the original guideline document.	☢☢☢
MRA neck without IV contrast	4	This procedure may be considered in patients with renal insufficiency.	O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Penetrating neck injury. Normal or equivocal CTA. Concern for vascular injury.

Radiologic Procedure	Rating	Comments	RRL*
Arteriography neck	8	See references 2,6,8,20,21 in the original guideline document.	☢☢☢
MRA neck without and with IV contrast	5	See references 4,10,13,15,23 in the original guideline document.	O
MRA neck without IV contrast	4		O
US neck	4	See references 4,13-15,22,23 in the original guideline document.	O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Penetrating neck injury. Normal or equivocal CTA. Concern for aerodigestive injury.

Radiologic Procedure	Rating	Comments	RRL*
X-ray barium swallow single contrast	8	See references 2,6,8,11,27 in the original guideline document.	☢☢☢
MRI neck without and with IV contrast	5	See references 4,10,13,15,23,26 in the original guideline document.	O
MRI neck without IV contrast	5		O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Summary of Literature Review

Introduction/Background

In the United States, penetrating neck injuries encompass roughly 1% to 10% of emergency department trauma cases, with a mortality rate of up to 10%. Classically, penetrating neck injuries are described as those injuries that penetrate the platysma muscle and are divided into 3 anatomic zones: zone I extends from the clavicles/sternal notch to the cricoid cartilage, zone II extends from the cricoid cartilage to the mandibular angle, and zone III extends from the mandibular angle to the skull base. Injury to any zone of the neck has the potential to damage multiple densely positioned vital structures because of the associated complex anatomy. Traditionally, penetrating injuries to zone II were immediately taken for surgical exploration, whereas injuries to zones I and III were evaluated by conventional angiography and other modalities, including computed tomographic angiography (CTA). However, some current literature supports the use of a "no-zone" approach to the evaluation of penetrating neck injuries. Multiple algorithmic approaches are used in evaluation and treatment of these patients. Vascular injury occurs in up to 25% of patients with penetrating neck injuries, with up to 25% of these vascular injuries being arterial in nature.

Current approaches to patients with penetrating neck injuries result from clinical evaluation and the findings of hard versus soft signs. Hard signs of vascular/aerodigestive injury include active hemorrhage, pulsatile/expanding hematoma, bruit/thrill in the region of the wound, hemodynamic instability, unilateral upper-extremity pulse deficit, massive hemoptysis/hematemesis, air bubbling in the wound, and airway compromise. These hard signs of injury are associated with an unstable or potentially unstable patient and often mandate immediate operative evaluation and treatment without preoperative imaging. Symptoms related to cerebral ischemia are also hard signs of penetrating injury, but these patients may be stable enough to benefit from first performing imaging studies. Imaging of the brain in addition to the head and neck vasculature may be used to determine optimal surgical, endovascular, or medical therapy. Soft signs of vascular and aerodigestive injury include nonpulsatile/nonexpanding hematoma, venous oozing, dysphagia, dysphonia, and subcutaneous emphysema. These commonly result in further evaluation, typically with imaging.

Overview of Imaging Modalities

CTA dominates the imaging landscape when it comes to the initial evaluation of penetrating neck trauma patients who do not require immediate surgical exploration. In early comparisons with catheter angiography, CTA demonstrated high sensitivity and specificity. This held true in a prospective study in 2012 for detecting vascular and aerodigestive injury by CTA, where sensitivity was 100% and specificity was 97.5%. Early adoption of CTA in the initial evaluation of patients with penetrating injuries to the neck led to a decrease in overall neck explorations and negative neck explorations as well as the use of catheter angiography and esophagography. A recent retrospective study reviewed the selective nonoperative management of patients with clinical hard signs. Of patients with hard signs who were hemodynamically stable and had a stable airway, 74% who received a CTA were able to avoid surgical neck exploration.

In patients for whom the risk of allergic reaction to iodinated contrast is high or unknown, premedication may be appropriate per American College of Radiology (ACR) recommendations. If there is a high risk for contrast reaction or if iodinated contrast cannot be given, unenhanced computed tomography (CT) imaging of the neck may be performed, but with the understanding the vasculature may be underevaluated.

Catheter angiography has been considered the gold standard for vascular imaging in penetrating neck injury, in particular when zone I or III is involved, although it has been supplanted by CTA. Catheter angiography still has a place when there are equivocal findings on CTA or when a vascular access–based treatment approach is warranted.

Ultrasound (US) is limited in its use in patients with penetrating neck injury, given the effect of overlying/adjacent soft-tissue injury. It may be complicated by a cervical collar or overlying skin dressings, provides limited evaluation of surrounding structures, and is of limited use in zone I and III injuries. Early studies comparing US and catheter-based angiography demonstrated a sensitivity of 91%, a specificity of 98% to 100%, a positive predictive value of 100%, and a negative predictive value of 99% for patients with clinical soft signs imaged by US.

Magnetic resonance imaging/magnetic resonance angiography (MRI/MRA) are limited in the initial trauma setting given the length of scanning, potentially critical nature of the patient's condition, and concern for metallic foreign bodies. Concern for metallic foreign bodies may be investigated by either CT or radiographs. MRI/MRA use in evaluation of spinal cord injury, traumatic disk injury, ligamentous injury, and blood within the spinal canal, however, is quite valuable, as is their application in the evaluation of laryngeal cartilaginous injuries.

Fluoroscopic upper gastrointestinal tract examination has its role in the evaluation of penetrating neck injuries but is typically used as a problem-solving modality. Barium swallow, preferably with water-soluble contrast, may miss significant oropharyngeal and hypopharyngeal injuries, although this imaging examination will typically detect esophageal injuries.

As arterial injury occurs in a proportion of patients with penetrating neck injury, one must be cognizant of the possibility of end-organ injury, particularly to the brain. Although not directly related to imaging of the neck in penetrating injuries, imaging of the brain and cerebral vasculature may be considered where cervical vascular injury is determined either by clinical examination, imaging, or surgery.

Discussion of Procedures by Variant

Variant 1: Penetrating Neck Injury. Clinical Soft Injury Signs

Radiography

Radiographs are ubiquitous in radiology and in some practices may be employed in the initial evaluation of acute trauma patients. In the initial evaluation in the trauma bay, radiographs of the neck may demonstrate radiopaque foreign bodies, soft-tissue swelling, airway competency, fractures, and subcutaneous emphysema. With the exception of patients exhibiting clear hard signs necessitating immediate surgical intervention, the initial radiographs are generally followed by a more detailed CT/CTA evaluation.

Computed Tomography Angiography

After the clinical determination is made regarding the need for immediate surgical exploration (e.g., presence of hard versus soft signs), CTA is

considered the first-line imaging evaluation, replacing catheter angiography as the preferred modality. Multiple studies have shown CTA to have high sensitivity, in the range of 90% to 100%; specificity ranging from 98.6% to 100%; a positive predictive value of 92.8% to 100%; and a negative predictive value of 98% to 100% for evaluating vascular injury. In addition to identifying vascular injury, CTA simultaneously identifies extravascular soft-tissue and aerodigestive injuries with a sensitivity of 100% and a specificity ranging from 93.5% to 97.5%.

CT esophagography has been described for diagnosing suspected upper-digestive-tract injuries in the trauma setting. There are limited data on this imaging modality, which can be performed either in conjunction with the CTA or as a separate study. In a prospective study, CT esophagography performed in conjunction with CTA yielded a sensitivity of 100% compared to those evaluated with CT esophagography alone (95%). Specificity varied between 85% and 91% for both studies (CT esophagography alone or in conjunction with CTA).

Arteriography, MRI, MRA, US, and Esophagram

Although catheter angiography, MRI, MRA, US, and fluoroscopic studies could be used in the initial evaluation of penetrating neck injury, these are typically relegated to problem solving for specific issues in contemporary trauma workups.

Variant 2: Penetrating Neck Injury. Normal or Equivocal CTA. Concern for Vascular Injury

Arteriography

Catheter angiography was traditionally used in the evaluation of zones I and III but now is considered primarily in the evaluation of patients with a normal or equivocal CTA with a concerning penetrating foreign body trajectory or when endovascular therapy is to be performed. Catheter angiography may be performed in follow-up to equivocal CTA examinations, especially when a clinically significant vascular injury cannot be reliably excluded. A limitation of CTA is the potential for streak artifact from retained metallic foreign bodies; in this instance digital subtraction catheter angiography may be more sensitive and appropriate for vascular evaluation.

Ultrasound

Studies in the 1990s demonstrated a high sensitivity and specificity, as well as positive and negative predictive values, of US in patients with penetrating injuries to the neck. In considering the strengths of US evaluation versus the limitations as discussed, in only very specific circumstances may US provide additional diagnostic insight. For overall structural and functional assessment in the initial evaluation period, arteriography remains the preferred modality.

Magnetic Resonance Angiography

MRA may be feasible in the clinically stable patient for the evaluation of vascular injuries, although limitations such as potential retained foreign bodies and length of the examination may preclude its use. In select and appropriate patients, MRI techniques, including 2-D and 3-D time-of-flight, contrast-enhanced time-resolved, and phase-contrast techniques, are available to evaluate the neck vasculature. The 2-D and 3-D time-of-flight techniques do not require contrast for their technique.

Variant 3: Penetrating Neck Injury. Normal or Equivocal CTA. Concern for Aerodigestive Injury

X-ray Barium Swallow

Various algorithms are present in practice for the use of esophagrams in the evaluation of aerodigestive injury in the penetrating neck injury patient. These algorithms vary depending on factors such as whether or not the patient is symptomatic, the degree of clinical concern, the outcome of the initial CT/CTA, and the mechanism of injury. One group argues that contrast fluoroscopic studies should not be used in the evaluation of oropharyngeal and hypopharyngeal injuries given that water-soluble and thin barium examinations missed 13 of 13 injuries in this area, compared with video endoscopy performed at the bedside. Water-soluble contrast is preferred, as there is the risk of extraluminal contrast extravasation. Panendoscopy with laryngoscopy, bronchoscopy, and esophagoscopy (flexible and rigid) is the gold standard to rule out oropharyngeal, hypopharyngeal, laryngotracheal, and esophageal injuries.

Magnetic Resonance Imaging

Overall, CT/CTA is preferred when evaluating for acute osseous and soft-tissue cervical injuries. MRI, in particular fat-suppressed T2-weighted imaging, is more sensitive for assessing potential cartilaginous and fibrous injuries but is relegated to specific problem-solving cases and is not routinely performed. Standard MRI sequences to include short tau inversion recovery and T2, as well as gadolinium-enhanced T1 with fat saturation, may help further define the extent of injury of the soft tissues.

Summary of Recommendations

- In patients with penetrating neck injuries with clinical soft injury signs and in patients with hard signs of injury who do not require immediate

surgical exploration, CTA of the neck is the preferred imaging procedure to evaluate the extent of injury.
- When there remains clinical concern for vascular injury despite a normal or equivocal CTA of the neck, catheter-based arteriography is useful for further evaluation. The benefit of arteriography is the ability to perform, in tandem, an endovascular procedure if needed.
- If there remains a concern for aerodigestive injury despite a normal or equivocal CTA of the neck, an x-ray barium swallow single contrast may be considered, but it should be used in conjunction with direct visualization techniques.

Abbreviations

- CTA, computed tomography angiography
- IV, intravenous
- MRA, magnetic resonance angiography
- MRI, magnetic resonance imaging
- US, ultrasound

Relative Radiation Level Designations

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
O	0 mSv	0 mSv
☢	<0.1 mSv	<0.03 mSv
☢☢	0.1-1 mSv	0.03-0.3 mSv
☢☢☢	1-10 mSv	0.3-3 mSv
☢☢☢☢	10-30 mSv	3-10 mSv
☢☢☢☢☢	30-100 mSv	10-30 mSv
*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "Varies."		

Clinical Algorithm(s)

Algorithms were not developed from criteria guidelines.

Scope

Disease/Condition(s)

Penetrating neck injury

Guideline Category

Evaluation

Clinical Specialty

Emergency Medicine

Neurology

Otolaryngology

Radiology

Surgery

Intended Users

Advanced Practice Nurses

Health Care Providers

Health Plans

Hospitals

Managed Care Organizations

Physician Assistants

Physicians

Students

Utilization Management

Guideline Objective(s)

To evaluate the appropriateness of imaging procedures for patients with penetrating neck injury

Target Population

Patients with penetrating neck injury

Interventions and Practices Considered

1. Computed tomography angiography (CTA), neck with intravenous (IV) contrast
2. X-ray
    - Neck
    - Biphasic esophagram
    - Barium swallow single contrast
3. Ultrasound, neck
4. Magnetic resonance angiography (MRA), neck
    - Without and with IV contrast
    - Without IV contrast
5. Arteriography, neck
6. Magnetic resonance imaging (MRI), neck
    - Without and with IV contrast
    - Without IV contrast

Major Outcomes Considered

- Utility of imaging procedures in the evaluation of penetrating neck injury
- Sensitivity, specificity, and accuracy of imaging procedures in the evaluation of penetrating neck injury

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search Summary

A literature search was conducted in February 2015 and March 2017 to identify evidence for the *ACR Appropriateness Criteria® Penetrating Neck Injury* topic. Using the search strategies described in the literature search companion (see the "Availability of Companion Documents" field), 80 articles were found. Nineteen articles were used in the topic. The remaining articles were not used due to either poor study design, the articles were not relevant or generalizable to the topic, or the results were unclear or biased.

The author added 11 citations from bibliographies, Web sites, or books that were not found in the literature searches, including 8 articles outside of the search date ranges.

Three citations are supporting documents that were added by staff.

See also the American College of Radiology (ACR) Appropriateness Criteria® literature search process document (see the "Availability of Companion Documents" field) for further information.

Number of Source Documents

The literature search conducted in February 2015 and March 2017 identified 19 articles that were used in the topic. The author added 11 citations from bibliographies, Web sites, or books that were not found in the literature searches, including 8 articles outside of the search date ranges. Three citations are supporting documents that were added by staff.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Definitions of Study Quality Categories

Category 1 - The study is well-designed and accounts for common biases.

Category 2 - The study is moderately well-designed and accounts for most common biases.

Category 3 - The study has important study design limitations.

Category 4 - The study or source is not useful as primary evidence. The article may not be a clinical study, the study design is invalid, or conclusions are based on expert consensus.

> The study does not meet the criteria for or is not a hypothesis-based clinical study (e.g., a book chapter or case report or case series description);
>
> *Or*
>
> The study may synthesize and draw conclusions about several studies such as a literature review article or book chapter but is not primary evidence;

Or

The study is an expert opinion or consensus document.

Category M - Meta-analysis studies are not rated for study quality using the study element method because the method is designed to evaluate individual studies only. An "M" for the study quality will indicate that the study quality has not been evaluated for the meta-analysis study.

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The topic author assesses the literature then drafts or revises the narrative summarizing the evidence found in the literature. American College of Radiology (ACR) staff drafts an evidence table based on the analysis of the selected literature. These tables rate the study quality for each article included in the narrative.

The expert panel reviews the narrative, evidence table and the supporting literature for each of the topic-variant combinations and assigns an appropriateness rating for each procedure listed in the variant table(s). Each individual panel member assigns a rating based on his/her interpretation of the available evidence.

More information about the evidence table development process can be found in the ACR Appropriateness Criteria® Evidence Table Development document (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

Rating Appropriateness

The American College of Radiology (ACR) Appropriateness Criteria (AC) methodology is based on the RAND Appropriateness Method. The appropriateness ratings for each of the procedures or treatments included in the AC topics are determined using a modified Delphi method. A series of surveys are conducted to elicit each panelist's expert interpretation of the evidence, based on the available data, regarding the appropriateness of an imaging or therapeutic procedure for a specific clinical scenario. The expert panel members review the evidence presented and assess the risks or harms of doing the procedure balanced with the benefits of performing the procedure. The direct or indirect costs of a procedure are not considered as a risk or harm when determining appropriateness. When the evidence for a specific topic and variant is uncertain or incomplete, expert opinion may supplement the available evidence or may be the sole source for assessing the appropriateness.

The appropriateness is represented on an ordinal scale that uses integers from 1 to 9 grouped into three categories: 1, 2, or 3 are in the category "usually not appropriate" where the harms of doing the procedure outweigh the benefits; and 7, 8, or 9 are in the category "usually appropriate" where the benefits of doing a procedure outweigh the harms or risks. The middle category, designated "may be appropriate," is represented by 4, 5, or 6 on the scale. The middle category is when the risks and benefits are equivocal or unclear, the dispersion of the individual ratings from the group median rating is too large (i.e., disagreement), the evidence is contradictory or unclear, or there are special circumstances or subpopulations which could influence the risks or benefits that are embedded in the variant.

The ratings assigned by each panel member are presented in a table displaying the frequency distribution of the ratings without identifying which members provided any particular rating. To determine the panel's recommendation, the rating category that contains the median group rating without disagreement is selected. This may be determined after either the first or second rating round. If there is disagreement after the first rating round, a conference call is scheduled to discuss the evidence and, if needed, clarify the variant or procedure description. If there is disagreement after the second rating round, the recommendation is "May be appropriate."

This modified Delphi method enables each panelist to articulate his or her individual interpretations of the evidence or expert opinion without excessive influence from fellow panelists in a simple, standardized, and economical process. For additional information on the ratings process see

the Rating Round Information document.

Additional methodology documents, including a more detailed explanation of the complete topic development process and all ACR AC topics can be found on the ACR Web site (see also the "Availability of Companion Documents" field).

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The recommendations are based on analysis of the current medical evidence literature and the application of the RAND/UCLA appropriateness method and expert panel consensus.

Summary of Evidence

Of the 33 references cited in the *ACR Appropriateness Criteria® Penetrating Neck Injury* document, 6 are categorized as therapeutic references. Additionally, 27 references are categorized as diagnostic references including 1 well-designed study, 2 good-quality studies, and 8 quality studies that may have design limitations. There are 22 references that may not be useful as primary evidence.

Although there are references that report on studies with design limitations, 3 well-designed or good-quality studies provide good evidence.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- The benefit of arteriography is the ability to perform, in tandem, an endovascular procedure if needed.
- Early adoption of computed tomography angiography (CTA) in the initial evaluation of patients with penetrating injuries to the neck led to a decrease in overall neck explorations and negative neck explorations as well as the use of catheter angiography and esophagography. A recent retrospective study reviewed the selective nonoperative management of patients with clinical hard signs. Of patients with hard signs who were hemodynamically stable and had a stable airway, 74% who received a CTA were able to avoid surgical neck exploration.

Potential Harms

Relative Radiation Level Information

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level (RRL) indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, both because of organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure). For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared to those specified for adults. Additional information regarding radiation dose assessment for imaging examinations can be found in the American College of Radiology (ACR) Appropriateness Criteria® Radiation Dose Assessment Introduction document (see the "Availability of Companion Documents" field).

Qualifying Statements

Qualifying Statements

Qualifying Statements

- The American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.
- ACR seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document.
- The views expressed in this manuscript are those of the author and do not reflect the official policy of the Department of Army/Navy/Air Force, Department of Defense, or United States Government.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Schroeder JW, Ptak T, Corey AS, Ahmed O, Biffl WL, Brennan JA, Chandra A, Ginsburg M, Hanley M, Hunt CH, Johnson MM, Kennedy TA, Patel ND, Policeni B, Reitman C, Steigner ML, Stiver SI, Strax R, Whitehead MT, Dill KE, Expert Panels on Neurologic and Vascular Imaging. ACR Appropriateness CriteriaÂ® penetrating neck injury. Reston (VA): American College of Radiology (ACR); 2017. 7 p. [33 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2017

Guideline Developer(s)

American College of Radiology - Medical Specialty Society

Source(s) of Funding

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

Guideline Committee

Committee on Appropriateness Criteria, Expert Panels on Neurologic and Vascular Imaging

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

All panel members, authors, and chairs must complete a Conflict of Interest and Expertise Survey annually, disclosing any actual or potential conflicts related to duties and responsibilities on the panel.

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the American College of Radiology (ACR) Web site.

Availability of Companion Documents

The following are available:

- ACR Appropriateness Criteria®. Overview. Reston (VA): American College of Radiology; 2015 Oct. 3 p. Available from the American College of Radiology (ACR) Web site.
- ACR Appropriateness Criteria®. Literature search process. Reston (VA): American College of Radiology; 2015 Feb. 1 p. Available from the ACR Web site.
- ACR Appropriateness Criteria®. Evidence table development. Reston (VA): American College of Radiology; 2015 Nov. 5 p. Available from the ACR Web site.
- ACR Appropriateness Criteria®. Topic development process. Reston (VA): American College of Radiology; 2015 Nov. 2 p. Available from the ACR Web site.
- ACR Appropriateness Criteria®. Rating round information. Reston (VA): American College of Radiology; 2015 Apr. 5 p. Available from the ACR Web site.
- ACR Appropriateness Criteria®. Radiation dose assessment introduction. Reston (VA): American College of Radiology; 2017. 4 p. Available from the ACR Web site.
- ACR Appropriateness Criteria®. Manual on contrast media. Reston (VA): American College of Radiology; 2017. 125 p. Available from the ACR Web site.
- ACR Appropriateness Criteria®. Procedure information. Reston (VA): American College of Radiology; 2017 Mar. 4 p. Available from the ACR Web site.
- ACR Appropriateness Criteria® penetrating neck injury. Evidence table. Reston (VA): American College of Radiology; 2017. 13 p. Available from the ACR Web site.
- ACR Appropriateness Criteria® penetrating neck injury. Literature search. Reston (VA): American College of Radiology; 2017. 2 p. Available from the ACR Web site.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on June 23, 2017.

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